#7 - Future Disease Threats in 2039

Epigenetic Diseases and "Diseases of Meaning" Are America's Biggest Health Issues in 2039

Forecasts:

- **In 2039 "diseases of meaning" cause the most social disruption and disability.**
- **Epigenetics research leads to design of optimum environments for preventing gene expression that will show up as disease predispositions later in life.**
- **Long-term chronic diseases resulting from the prior childhood obesity epidemic continue to consume 65% of health resources.**
- **Health enhancements focus some people on spiritual growth and others on physical augmentation, including genetic engineering and superlongevity programs.**

"Diseases of meaning" have emerged as a major threat in the first four decades of the 21st century as technology-driven changes in society have created more psychosocial morbidity. The pace of life has continued to accelerate, forcing people to interact with more complex technologies in more complex settings, or risk falling behind. Much of the work that humans traditionally had done was taken over by computers and robots. Many people feel work has lost meaning when they are the "nanny to a hundred computers," making difficult but fundamentally rote connections between various processes. The rates of depression, accidents and suicide have grown steadily during the 21st century, and so too have many high-risk behaviors.

Human experience in the world of the computer has come to blur the distinction between what is real and unreal. People hold meetings, drive cars, solve problems, and maintain relationships more often in virtual reality than they do in "real life." Where emotional factors have been integrated into these technologies, they largely follow the desires of the user, creating a feeling of emotional satisfaction that is devoid of both struggle and growth. Increasing isolation from genuine human contact, with the conscious and unconscious forms of emotional communication it entails, fosters "diseases of meaning" that now pose the greatest threat to individual and population health.

Many people seek fast and exciting lives, but often with a deep sense of emptiness and lack of meaning. In a technology-driven world where computers can do whatever you want, the essential traumas and progressions of human life have retreated to the unconscious, whence they emerge in depression, pushing up rates of suicide, homicide, and other destructive behaviors. Emerging advances in neurotechnology are helping to understand the problem, yet in 2039 there are still no breakthroughs with biological or cognitive therapies promising the kind of successes already made against chronic and infectious diseases.

While chronic diseases are still tackled therapeutically late in life, the big advances of the past three decades are based on effective epigenetic knowledge. Prevention strategies against chronic disease are best started early in life, prenatally. The study of epigenetics has showed how environmental factors switch genes on or off. In effect, genetic studies have predicted what environments need to be created from womb to tomb in order to minimize the risk of chronic diseases. What environmental efforts cannot prevent gets treated early on the path to disease, rarely reaching the point of needing acute care.

One third of cancers can now be identified at a pre-cancerous phase with proper screening and therapy can return tissue to normal. Almost 80% of clinical cancers can be cured with individualized targeted therapies. The other 20% are either too advanced or clever to be eliminated, but in most cases they can be managed as chronic diseases with a good quality of life for years by adjusting therapy to keep the cancer in check.

The chronic disease epidemics of the early 21st century – diabetes, heart disease – have subsided as researches and global leaders unraveled the ability of behavior and culture to permanently disrupt biologic pathways. However, a large middle-age and elderly cohort still suffers the consequences of the childhood obesity "epidemic" of the 2000's and 2010's, suffering from diabetes, cardiovascular disease, osteoarthritis, renal disease and other problems. These people will require lifelong therapy because of irreversible damage that in most cases does not respond to existing stem cell and other restorative therapies. Effective societal lifestyle changes in place for the last decade dramatically reduced new cases of obesity, but drug therapy for reversing extreme obesity is only partially effective.

These lifestyle changes, and the societal changes they required, have shifted the focus from individual health to population health. As a result, community building, conflict resolution, and lifestyle management have become key functions of the public health system. Governments have created new capacities to intervene in communities in crisis, addressing the social, psychological, and health factors creating the discord.

New and drug-resistant infectious diseases are now controllable problems thanks to advances in the understanding of pathogens and immunity. Our global real-time surveillance system, fast genetic identification of pathogens and ability to rapidly engineer the mass production of cell culture polyvaccines permit immunization of the global population within a few days of the detection of a new viral threat. Therapies can also create superimmunity helping individuals develop high resistance to infectious threats. The big paradigm shift is away from antibiotics to microbe ecology management for preventing and treating bacterial infections. This process ensures the proper distribution of healthy microbes in the body to crowd out the pathogens while maintaining symbiosis within our bodies.

Ecological health is more than a health strategy in 2039; it is a global movement that unites many people in a quest that links spiritual, communal and physical health. Many people believe today that to address the diseases of meaning and to remove the remaining burden of chronic disease, we need to reconnect spiritually in a way that was largely forgotten by the modern mind. In every society people are seeking the perennial wisdom of ancient religions while supporting the emergence of a new spiritual movement that views disease and health in a larger collective context more than just as a physical manifestation.

Further Reading:

- Kurzweil, R., and Grossman, T., *Fantastic Voyage: Live Long Enough to Live Forever*, Rodale Press, 2004.
- Wilber, K. *Grace and Grit: Spirituality and Healing in the Life and Death of Treya Killam Wilber,* Shambala Press, 2000.
- Young, E., "Rewriting Darwin: The new non-genetic inheritance," *New Scientist*, July 9, 2008.